

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte GERHARD WOLLMANN,  
JOERG SCHWARZER, and  
BERNHARD GUTSCHE

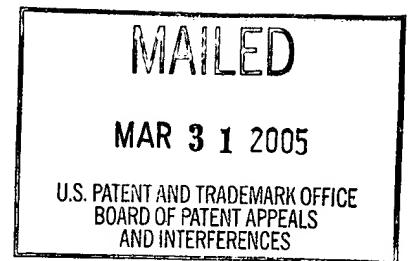
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Appeal No. 2005-0222  
Application No. 09/923,629

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ON BRIEF

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Before ELLIS, ADAMS, and GREEN, Administrative Patent Judges.

GREEN, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-9 and 13-31.<sup>1</sup> Claim 1 is representative of the subject matter on appeal, and read as follows:

1. A process for producing sterols, said process comprising:
  - (a) providing a fatty acid production-residue, said residue comprising sterol esters, free fatty acids, and partial glycerides;

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<sup>1</sup> Claims 1-32 are pending. Claims 10-12 and 32 stand objected to, but have been indicated as allowable if rewritten in independent form. See Appeal Brief, page 3.

- (b) removing the free fatty acids;
- (c) transesterifying the partial glycerides with a lower alcohol in the presence of a basic catalyst under mild transesterification conditions to form fatty acid alkyl esters and glycerol;
- (d) removing excess lower alcohol, the basic catalyst, the glycerol and the fatty acid alkyl esters, to form a bottom product comprising the sterol esters; and
- (e) transesterifying the sterol esters at a temperature of from 115°C to 145°C and a pressure of from 2 to 10 bar for a period of from 3 to 10 hours to form free sterols.

The examiner relies upon the following references:

Hunt (Hunt '669)	5,670,669	Sep. 23, 1997
Hunt et al. (Hunt '252)	5,703,252	Dec. 30, 1997
Hernandez et al. (Hernandez)	6,448,423	Sep. 10, 2002

Claims 1-3, 6-9 and 13-31 stand rejected under 35 U.S.C. § 103(a) over the combination of Hunt '252 and Hunt '669. In addition, claims 4 and 5 stand rejected as obvious over the previous combination as further combined with Hernandez. After careful review of the record and consideration of the issues before us, we reverse both rejections.

#### DISCUSSION

Claims 1-3, 6-9 and 13-31 stand rejected under 35 U.S.C. § 103(a) over the combination of Hunt '252 and Hunt '669.

The rejection asserts that based on the teachings of the two Hunt patents, "the recovery of sterols from starting materials containing fatty and sterol compounds such as vegetable oils by a process comprising the removal of the

free fatty acids by esterification; transesterification of the fatty acid glyceride esters in the presence of a lower alcohol and basic catalyst; removal of the excess alcohol, basic catalyst, fatty acid alkyl ester and glycerol; and conversion of the sterol esters in the product obtained by transesterification would be obvious to the skilled artisan in the art at the time of the invention.” Examiner’s Answer, page 4.

The rejection concludes:

The instant claims differ by reciting the transesterification of the sterol esters is at a temperature of from 115°C to 145°C and a pressure of from 2 to 10 bar for a period of from 3 to 10 hours. However (a) [Hunt '252] teach[es] said transesterification can be done at temperatures between about 150°C and about 240°C and in reaction times of 10 minutes or more, such as 1 to about 3 hours under pressure and (b) optimization of the reaction by variation in reaction conditions such as, temperature, pressure and/or reaction time is with[in] [sic] the level of skill of the ordinary artisan. The motivation to make changes to the reaction conditions would be based on the desire to obtain optimum conditions resulting in increase[d] [sic] yield of the desired product. Thus, the claimed process would have been obvious based on prior art teachings and the level of skill of ordinary artisan in the art at the time of the invention.

Id. at 4-5 (emphasis in original).

The burden is on the examiner to set forth a prima facie case of obviousness. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598-99 (Fed. Cir. 1988). “A rejection based on section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art. In making this evaluation, all facts must be considered. The Patent Office has the initial duty of supplying the factual basis

for its rejection. It may not, because it may doubt that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis. To the extent the Patent Office rulings are so supported, there is no basis for resolving doubts against their correctness. Likewise, we may not resolve doubts in favor of the Patent Office determination when there are deficiencies in the record as to the necessary factual bases supporting its legal conclusion of obviousness.” In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968) (emphasis in original).

Appellants primarily argue that the transesterification conditions taught by either of the Hunt references does not meet the mild transesterification conditions required by step (c) of claim 1. The rejection as set forth above, however, focuses on the transesterification of the sterol esters of step (e). We find that the rejection fails to set forth a prima facie case obviousness with respect to that step, and thus rest our decision on those grounds.

Step (e) of claim 1 requires that the sterol esters be transesterified “at a temperature of from 115°C to 145°C and a pressure of from 2 to 10 bar for a period of from 3 to 10 hours.” The rejection asserts “optimization of the reaction by variation in reaction conditions such as, temperature, pressure and/or reaction time is with the level of skill of the ordinary artisan. The motivation to make changes to the reaction conditions would be based on the desire to obtain

optimum conditions resulting in increase yield of the desired product.”

Examiner’s Answer, pages 4-5.

We acknowledge that it is generally considered to be obvious to the ordinary artisan to develop workable or even optimum ranges for parameters or variables that are known in the prior art as being result effective. See In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). Whether an obviousness conclusion is appropriate, however, depends on what the prior art discloses with respect to the parameter in question, and whether any such experimentation comes from the teachings in the art. See In re Sebek, 465 F.2d 904, 906-07, 175 USPQ 93, 95 (CCPA 1972); In re Waymouth, 499 F.2d 1273, 1276, 182 USPQ 290, 292 (CCPA 1974). Where the prior art discloses a range of values and suggests that the optimum range should be sought within that range, a parameter outside of that range may not be obvious. See id.

In the instant case, step (e) of claim 1 recites that the transesterification is conducted at a temperature of 115°C to 145°C from a time period of from 3 to 10 hours; whereas, Hunt ’252 discloses that the transesterification can be done at temperatures between about 150°C and about 240°C, in reaction times of 10 minutes or more, such as 1 to about 3 hours.<sup>2</sup> Thus, the claimed temperature is below the temperature range taught by Hunt ’252, and the claimed reaction time is the upper limit of that disclosed by Hunt. In example 1 of the Hunt ’252 patent,

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<sup>2</sup> The rejection only cites the Hunt ’252 patent to address the limitations of step(e) of claim 1. Thus, we need not address the teachings of the Hunt ’669 patent.


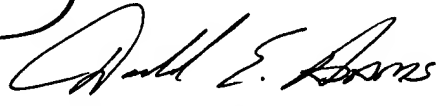
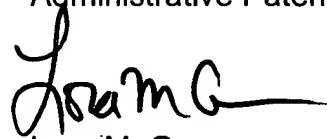
the transesterification is performed at 200°C in a reaction time of 2 hours, see Hunt '252, Col. 10. There is nothing in the Hunt '252 reference relied upon by the examiner to teach the claimed transesterification conditions required by step (e), that would lead the ordinary artisan to look below the temperature range taught by the prior art, or to go to the upper limit of the time range taught by the prior art, to determine the optimum values, and the rejection is reversed.

Finally, claims 4 and 5 stand rejected as obvious over the previous combination as further combined with Hernandez. As Hernandez is relied upon for teaching that silicate solutions are useful in the removal of free fatty acids in crude oils such as crude vegetable oils, it does not remedy the deficiencies of the previous combination, and this rejection is also reversed.

CONCLUSION

Because the examiner failed to set forth a prima facie case of obviousness, the rejections are reversed.

REVERSED

	)	
Joan Ellis	)	
Administrative Patent Judge	)	
	)	
Donald E. Adams	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
Lora M. Green	)	
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